Eelgrass Bed Exploration

Level
Grades 8-10

Subject Areas
Science, Language Arts

Objectives
Students will:
1. Understand the function and biological value of eelgrass beds
2. Understand habitat requirements of eelgrass beds

Materials
- Eelgrass Background Information Sheet
- Eelgrass worksheet

Duration
30 minutes

Overview
Students will read Eelgrass Background Information Sheet and complete the eelgrass worksheet as an introduction to the Estuary Live broadcast.

Procedure
1. For each student, make a copy of both the Background Information sheet and the worksheet.
2. Direct students to read the Background Information Sheet and complete the worksheet.
3. Discuss and summarize information presented in Information Sheet to ensure student comprehension of material.
4. Brainstorm questions they might ask of the Resource Professionals during the Estuary Live broadcast. Examples: How are eelgrass flowers pollinated? Are there consumers that eat healthy, live eelgrass?

Assessment
Answers provided by students on the worksheet should be correct. As a group, students should formulate at least three questions that could be asked during the Estuary Live Broadcast.

Eelgrass Background Information Sheet

Eelgrass (Zostera marina)

In the shallows of many healthy estuaries, where sunlight penetrates the water to the estuary bottom, dense stands of aquatic plants sway in unison with the incoming waves. Long and flowing, the slender leaf blades can grow up to several feet in length. Eelgrass spreads by sending out runners that creep along the bottom and repeatedly send up shoots that grow into new plants. The species produces tiny, inconspicuous flowers and seeds that appear on large and easily distinguished branching stalks. New plants take several years to reach maturity. This plant is among the only flowering plants that are able to grow underwater. Like grasses that are found on land, eelgrass roots itself into the substrate and produces seeds. It thrives in protected coastal waters with sandy or muddy bottoms.

Eelgrass serves as the link between the physical habitat and the biological community. The plants require specific physical and chemical conditions to remain vigorous. Eelgrass can grow only in those portions of the estuary shallow enough and clear enough to receive sufficient sunlight for photosynthesis. Heavy waves impede eelgrass roots from getting established. Some water circulation is desirable, however, to prevent from becoming choked with algae. Eelgrass tends to primarily live in areas where the plants will remain submerged the majority of the time; however, it can withstand exposure during extreme low-water periods (e.g., exceptionally low tides).

This fast growing plant is a critical part of the coastal ecosystem because it provides food and/or shelter to many different animals that use the estuary, including juvenile fish, invertebrates, crabs, and waterfowl. Molting crabs conceal themselves in the vegetation until their new shells have hardened. A variety of organisms [e.g., barnacles, bryozoans (a group of colonial invertebrates)] and eggs of many species attach directly to the leaves. Additionally, when the tide is low, the blades of the eelgrass capture water that can help guard smaller organisms against drying out or desiccation while waiting for high tide.

Eelgrass is so important to so many animals that its abundance is a good indicator of the overall health of the bay. Eelgrass is at the center of a small community: shrimp and worms burrow in the root-bound sand, pipefish hang out around the waving blades, and various fish attached their eggs to the blades. Young Coho salmon find safety from predators and a gourmet food selection in eelgrass beds as they make their way to the ocean. In turn, they stabilize sediments and provide habitat, nourishment, and oxygen to other species in the estuary. Because eelgrass, like other plants, photosynthesizes, it adds dissolved oxygen to the water thereby helping other aquatic organisms survive.

Eelgrass, like all living things, decays. This decayed plant material mixes with the decaying bodies of zooplankton, and other animals creating detritus. This detritus is a rich food source that feeds estuarine animals grazing in the eelgrass beds and as well as organisms elsewhere as the water movement circulates nutrients throughout the system.

Human Impacts

Estuaries are among the earth's most productive, diverse and economically important ecosystems. For these reasons, estuaries have been, and continue to be, magnets for human development. Today there are more people living in coastal areas then ever before. In fact, about 70% of the earth's population now lives within 50 miles of a coast. One of the results of this increased use of coastal areas has been the destruction of approximately 215,000,000 acres of estuarine habitat worldwide. In the Coos estuary, of which South Slough is a part, about 85% of the coastal wetlands have been filled and converted for other uses.

Federal, state and county agencies, and local citizens are currently working together on land use planning and management, water quality improvement and habitat restoration projects to help protect this unique place and other estuaries along the Oregon Coast.

Eelgrass Exploration Worksheet

Name: _____

List two primary producers found in an estuary.

1.

2.

Why doesn't eelgrass grow in deep water?

What is detritus? Give three examples of things in an estuary system that may become detritus.

List and briefly explain three functions that eelgrass serves in an estuary.

1.

2.

3.

How does photosynthesis help estuary organisms survive?

Name two conditions that increase the survival of eelgrass beds.

1.

2.

What is desiccation and how do small organisms benefit from eelgrass beds during a low tide?
Describe how juvenile coho salmon benefit eelgrass beds.

Name the two ways eelgrass reproduces.

1.

2.

Why doesn’t eelgrass grow as successfully in open coast environments?